an evaporator;

a compressor;

a refrigeration fluid suction line from the evaporator to the compressor; and

a suction line valve, in the refrigeration fluid suction line, being cyclable between open and closed positions, the suction line valve in the closed position in normal operation preventing refrigeration fluid flow to the compressor other than optionally permitting a limited refrigeration fluid flow through the suction line valve to prevent vacuum pump operation,

the suction line valve operative to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.

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Claim 9. (Twice Amended) An air conditioning or refrigeration system comprising:

an evaporator;

a compressor;

a refrigeration fluid suction line from the evaporator to the compressor, the refrigeration fluid suction line operative to carry refrigeration fluid from the evaporator to the compressor;

C2

a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and

a suction line valve, in the refrigeration fluid suction line, operatively connected to the controller to receive capacity control signals from the controller and being cyclable between open and closed positions, the suction line valve in the closed position in normal operation preventing refrigeration fluid flow to the compressor other than optionally permitting a limited flow through the suction line valve to prevent vacuum pump operation,

the suction line valve operative in response to capacity control signals received from the controller to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.

Claim 14. (Twice Amended) An air conditioning or refrigeration system comprising:

an evaporator;

a compressor;

a refrigeration fluid suction line from the evaporator to the compressor, the refrigeration fluid suction line operative to carry refrigeration fluid from the evaporator to the compressor;

c3 a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and

a solenoid valve, in the refrigeration fluid suction line, operatively connected to the controller to receive capacity control signals from the controller and being cyclable between open and closed positions, the solenoid valve in the closed position in normal operation preventing refrigeration fluid flow to the compressor other than optionally permitting a limited flow through the solenoid valve to prevent vacuum pump operation,

the solenoid valve operative in response to capacity control signals received from the controller to cycle between a fully open position and a fully closed position to modulate compressor capacity.

Claim 17. (Twice Amended) A capacity modulated compressor for an air conditioning or refrigeration system comprising:

c4 a compressor housing comprising a compression chamber, a refrigeration fluid suction line operative to pass refrigerant to the compression chamber, and at least one refrigerant discharge line operative to pass compressed refrigerant from the compression chamber;

a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and

a suction line valve, in the refrigeration fluid suction line, operatively connected to the controller to receive capacity control signals from the controller and being cyclable between open and closed positions, the suction line valve in the closed position in normal operation preventing refrigeration fluid flow to the

C4

compression chamber other than optionally permitting a limited flow through the suction line valve to prevent vacuum pump operation,

the suction line valve operative in response to capacity control signals received from the controller to cycle with a cycling time shorter than the response time of the system to modulate compressor capacity.

Claim 24. (Twice Amended) A capacity modulated compressor for an air conditioning or refrigeration system comprising:

a compressor housing comprising a compression chamber, at least one refrigerant suction line operative to pass refrigerant to the compression chamber, and at least one refrigerant discharge line operative to pass compressed refrigerant from the compression chamber;

C5

a capacity controller operative to generate a control signal corresponding to desired capacity modulation; and

a solenoid valve, in the refrigeration fluid suction line, operatively connected to the controller to receive capacity control signals from the controller and being cyclable between open and closed positions, the solenoid valve in the closed position in normal operation preventing refrigeration fluid flow to the compression chamber other than optionally permitting a limited flow through the solenoid valve to prevent vacuum pump operation,

the solenoid valve operative in response to capacity control signals received from the controller to cycle between a fully open position and a fully closed position to modulate compressor capacity.

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Claim 29. (Twice Amended) A capacity modulated compressor comprising:

a compressor having a refrigeration fluid suction line for supplying refrigeration fluid to the compressor;

a suction line valve provided in the suction line to the compressor, the suction line valve being operable between open and closed positions to cyclically allow and prevent flow of refrigeration fluid into the compressor, the suction line valve in the closed position in normal operation preventing refrigeration fluid flow to the compression chamber other than optionally permitting a limited refrigeration fluid flow through the suction line valve to prevent vacuum pump operation;

a controller for actuating the suction line valve between the open and closed positions, the controller being operative to cycle the suction line valve such that its cycle time is shorter than the response time of the system to modulate compressor capacity.

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Claim 33. (Twice Amended) A method of modulating the capacity of a compressor in an air conditioning or refrigeration system, comprising cycling a suction line valve, in fluid communication with the compressor, using a cycle time shorter than the response time of the system to modulate compressor capacity, the suction line valve being operable between open and closed positions to cyclically allow and prevent flow of refrigeration fluid into the compressor, the suction line valve in the closed position in normal operation preventing refrigeration fluid flow to the compression chamber other than optionally permitting a limited refrigeration fluid flow through the suction line valve to prevent vacuum pump operation.

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Claim 35. (Twice Amended) A method of modulating the capacity of a compressor in a closed refrigerant circulating system, said compressor comprising a compression chamber in fluid communication with a refrigerant suction line of the system through which refrigerant fluid is supplied to the compression chamber, comprising:

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rapidly cycling a solenoid valve, disposed in the refrigerant suction line upstream of said compression chamber, between its fully open position and its fully closed position to modulate compressor capacity, the solenoid valve in the closed position in normal operation preventing refrigeration fluid flow to the compression chamber other than optionally permitting a limited refrigeration fluid flow through the solenoid valve to prevent vacuum pump operation.

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